MTM

THE JOURNAL OF METHODS-TIME MEASUREMENT

Sept-Oct

1955

Vol. II

No. 4

In This Issue . . . . .

MTM ASSOCIATION FOR STANDARDS AND RESEARCH

The Journal of Methods-Time Measurement is dedicated to the technical aspects, application developments and general news items concerning the advancement of MTM.

The Journal encompasses the fields of endeavor that were formerly publicized in the MTM Newsletter and MTM Bulletin.

The technical section of the Journal is concerned chiefly with recent research developments both from the established research program at the University of Michigan, Ann Arbor, Michigan, and from somewhat smaller allied projects being conducted throughout the Association membership.

New applications of MTM as well as refinements of established applications are presented in the Application Section to illustrate specific approaches to management problems that can be solved through the use of Methods-Time Measurement.

Current events in the lives of persons associated with MTM are described in the general news section.

The Editorial Staff welcomes contributions for all three sections described.

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MTM

THE JOURNAL OF METHODS-TIME MEASUREMENT

MTM ASSOCIATION FOR STANDARDS AND RESEARCH

Printed by
Cushing-Malloy, Inc.
Editor . . . . . Richard F. Stoll
Assistant to the Editor . . . . . Mary J. Hendricks

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Editor's Note:

The Association has tried in every way possible to check the veracity of material published in the Journal of Methods Time Measurement. However, the opinions of the authors are not necessarily the opinions of the Association. The Association, therefore, will not be held responsible for any liability which may develop from any material in this publication.

FEATURE

4TH ANNUAL INTERNATIONAL MTM CONFERENCE

October 6 and 7, Chicago, Illinois

AUTOMATION—COMPLETELY AUTOMATIC MANUFACTURING

Charles F. Hautau, Chief Engineer, Hautau Engineering Company; seated at right, John A. Willard, President, MTM Association, Edward L. Barnett, A. T. Kearney & Company.

INTERNAL MANAGEMENT RELATIONS

Hugh F. McKenna, President, United States Junior Chamber of Commerce; seated at right, James McGovern, Staff Industrial Engineer, American Box Board Company; O. M. Aders, Manager Personnel Division, Perfect Circle Corporation.

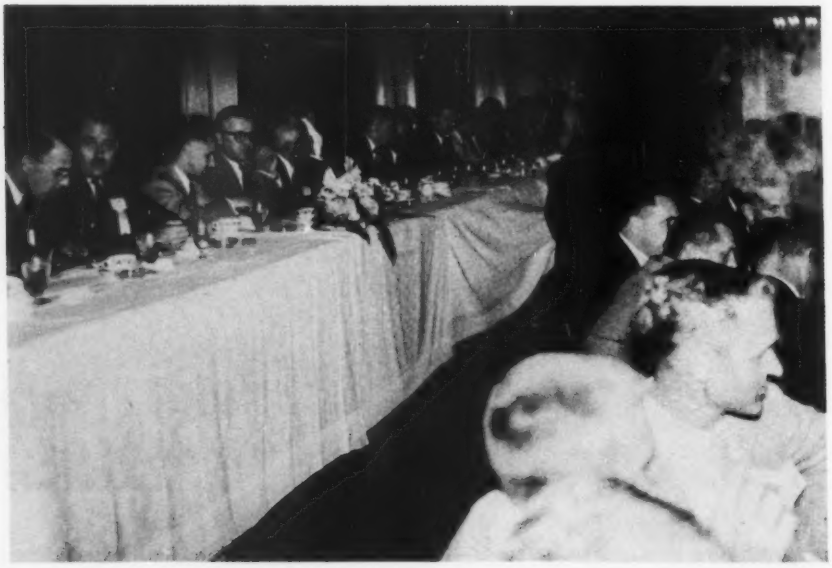
John A. Willard, President, MTM Association; seated, William C. Thompson, Conference Chairman.

William C. Thompson, Conference Chairman; seated left to right, Hugh F. McKenna, President, U. S. Junior Chamber of Commerce; O. M. Aders, Manager Personnel Division, Perfect Circle Corporation; E. R. Willis, Manager General Industrial Engineering, Owens-Corning Fiberglas Corp.; Edward W. Demmler, Headquarters Staff Industrial Engineer, Westinghouse Electric Corporation.

Right to left, T. E. Arnold, Chief Industrial Engineer, The Kroger Company; E. R. Willis, Manager General Industrial Engineering, Owens-Corning Fiberglas Corp.; R. F. Stoll, Executive Secretary, MTM Association; James McGovern, Staff Industrial Engineer, American Box Board Company; E. L. Barnett, A. T. Kearney & Company; Charles F. Hautau, Chief Engineer, Hautau Engineering Company.

Standing left to right, Howard Lickerman, Partner—Production Manager, Society Lingerie Company; William Young, Chief Engineer—Plant Manager, Steel City Electric Company; Charles A. Bogenrief, Department Head, Industrial and Plant Engineering, Grayson Controls Division, Robertshaw-Fulton Controls Company; Lee G. Smith, Senior Industrial Engineer in Charge of Piano and Organ Division, Baldwin Piano Company; William Gierl, Chief Industrial Engineer, Steel City Electric Company; Robert J. Levin, Production Engineer, United Mills Corporation; Ralph W. Eastwood III, Industrial Engineer in Charge of Standards Development, The Glenn L. Martin Company; Paul Hostelley, Otis Elevator Company; Richard L. Burdick, Assistant Manager of Industrial Engineering, The Maytag Company; Wilfred P. Juckem, Plant Manager, Eagle Signal Corporation.

Seated left to right, Charles F. Stephenson, Assistant Chief Industrial Engineer, York Corporation; Richard F. Stoll, Executive Secretary, MTM Association; John A. Willard, President, MTM Association; William C. Thompson, Conference Chairman; James A. Gage, Associate Professor, Mechanical Engineering, University of Wisconsin; Bert Steffy, Associate Professor, Mechanical-Industrial Engineering, University of Michigan; Charles Robison, Management Engineering Division, Bureau of Supplies and Accounts, Department of the Navy.



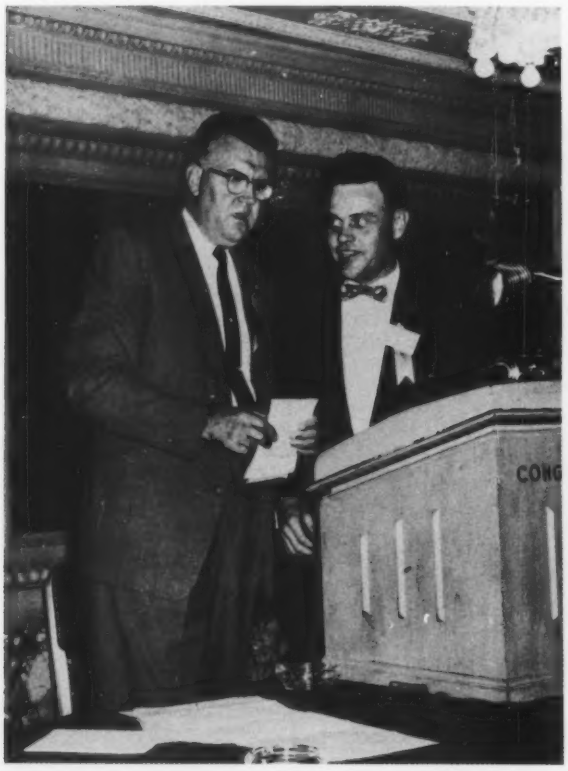
Conference Groups

CONFERENCE GROUPS

SELECTING THE MTM ANALYST

O. M. Aders, Manager, Personnel Division, Perfect Circle Corporation.

COST ELEMENTS OF MANUFACTURING IN RELATIONSHIP TO MTM



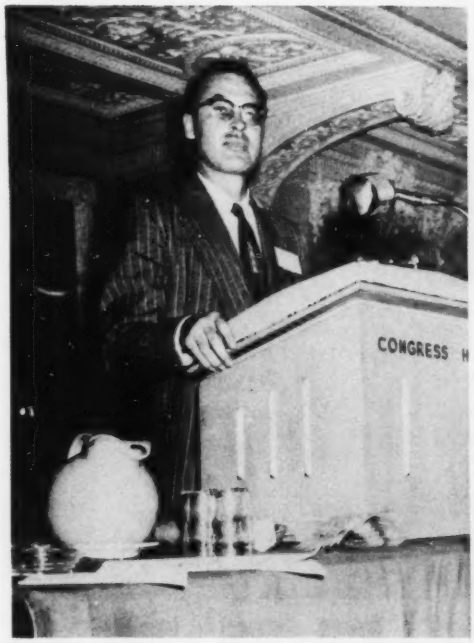
Left to right, E. R. Willis, Chairman; Edward W. Demmler, Headquarters Staff Industrial Engineer, Westinghouse Electric Corporation.

Chairman J. A. B. Briggs, Industrial Engineering Supervisor, Bathurst Power and Paper Company Limited.

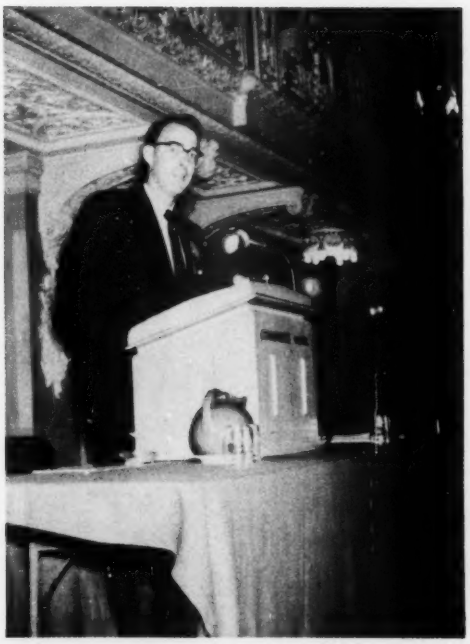
STATISTICAL QUALITY CONTROL AND MTM

Wayne M. Biklen, Director of Quality Control,
American Safety Razor Corporation.

DEVELOPING STANDARD DATA FOR INSPECTION STANDARDS WITH MTM

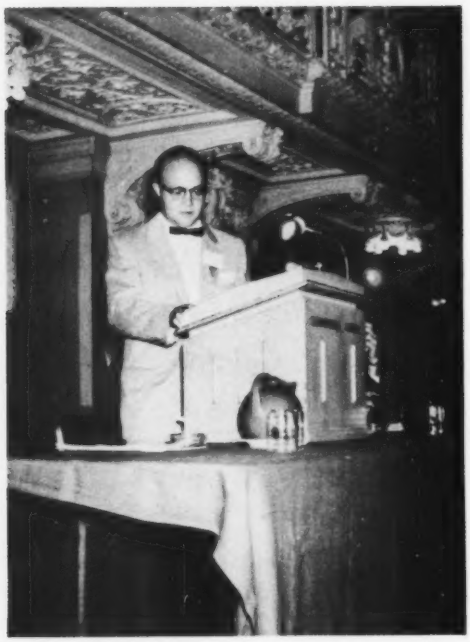


Elmer N. Barry, Supervisor of Industrial Engineering, West Bend Aluminum Company.



Chairman Charles F. Stephenson, Assistant Chief Industrial Engineer, York Corporation.

MTM AND PRODUCTION DESIGN



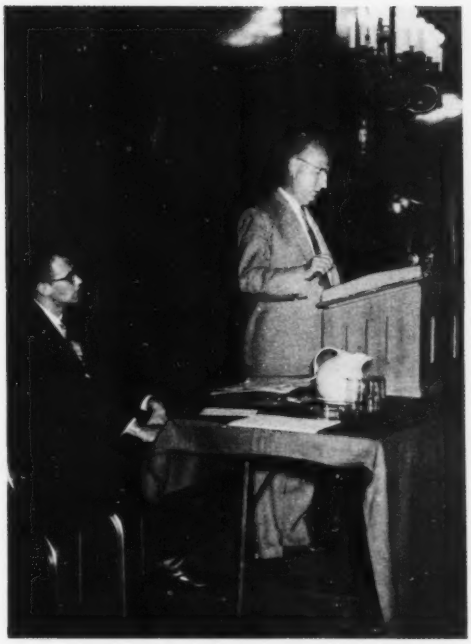
Irl Ward, Vice President, International Furniture Company.

MTM APPLIED TO PAPERWORK AND PUNCHED CARD OPERATIONS

David J. Tracy, Director of Engineering, International Furniture Company; seated, Irl Ward, Vice President, International Furniture Company.

Charles Robison, Management Engineering Division, Bureau of Supplies and Accounts, Department of the Navy.

MACHINING

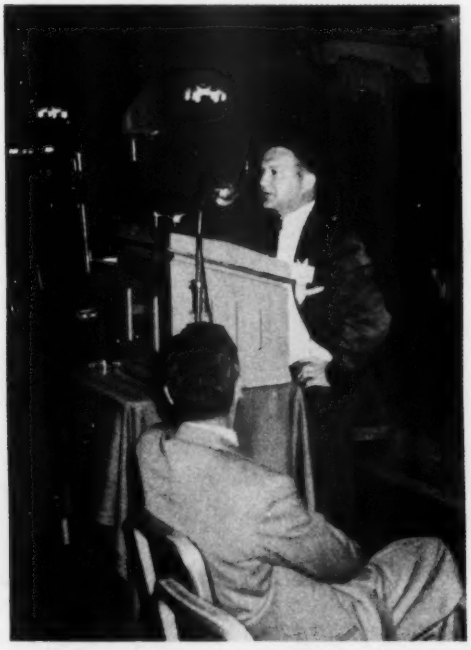


William Young, Chief Engineer-Plant Manager, Steel City Electric Company; seated, William Gierl, Chief Industrial Engineer, Steel City Electric Company.

Left to right, William Gierl, Chief Industrial Engineer, Steel City Electric Company; James A. Gage, Chairman.

Left to right, Richard L. Burdick, Assistant Manager of Industrial Engineering, The Maytag Company; Wilfred P. Juckem, Plant Manager, Eagle Signal Corporation.

ASSEMBLY



Paul Hostelley, Otis Elevator Company.

MACHINING

Left to right, Charles A. Bogenrief, Department Head, Industrial and Plant Engineering, Grayson Controls Division, Robertshaw-Fulton Controls Company; Lee G. Smith, Senior Industrial Engineer in Charge of Piano and Organ Division, Baldwin Piano Company; Ralph W. Eastwood III, Industrial Engineer in Charge of Standards Development, The Glenn L. Martin Company.

NEEDLE TRADES

Robert J. Levin, Production Engineer, United Mills Corporation; seated, Chairman Peter T. Swanish, Professor of Management, Loyola University.

William C. Thompson, Conference Chairman; seated, V. A. Metzger, Assistant Professor of Commerce, Longbeach State College.

James Stahlman,
Chief Industrial Engineer, Preco, Inc.

James Stahlman, Chief Industrial Engineer, Preco, Inc.; seated, Donald Wheeler, Standards Supervisor, Grayson Controls Division, Robertshaw-Fulton Controls Co.

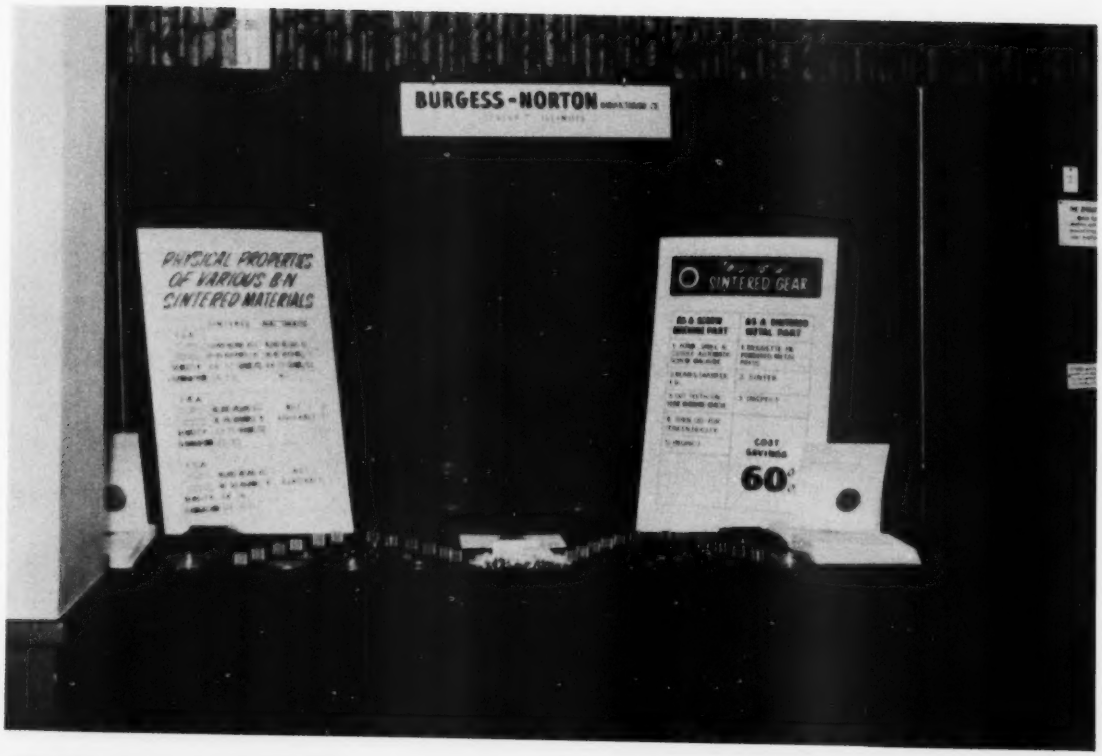
Donald Wheeler, Standards Supervisor, Grayson Controls Division, Robertshaw-Fulton Controls Co.

V. A. Metzger, Assistant Professor of Commerce, Longbeach State College.

Lloyd Gilbert, Chief Industrial Engineer, Virtue Brothers Mfg. Co.


corrugated containers
folding box board containers
fiber board containers


FILMOSOUND
BELL & HOWELL AUDIO-VISUAL
8, 16 AND 35 MM. CAMERAS
1.
2.
3.


BURGESS-NORTON
PHYSICAL PROPERTIES OF VARIOUS B-N SINTERED MATERIALS
SINTERED GEAR
COST SAVINGS
60%


MEYLAN STOPWATCH CO.


SHAKEPROOF
"KEPS"
SEMS
SHAKEPROOF
SHAKEPROOF
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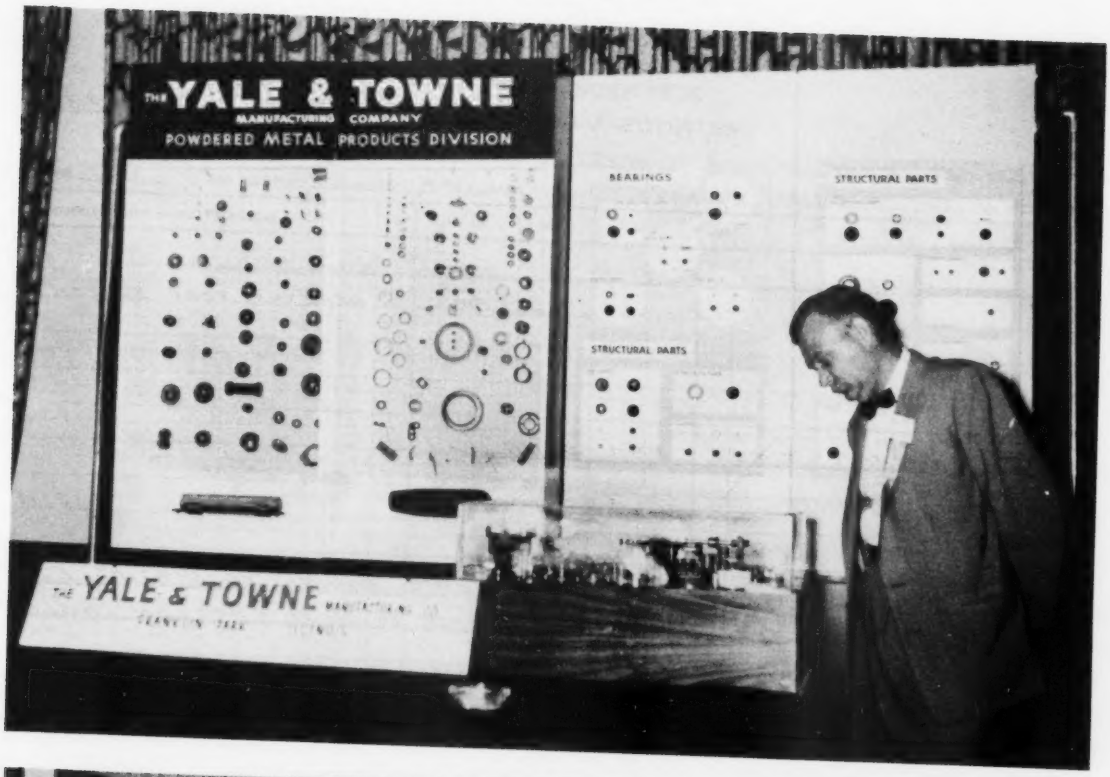
THREAD-CUTTING SCREWS


WALES-STRIPPIT CORP.


THE YALE & TOWNE
MANUFACTURING COMPANY
POWDERED METAL PRODUCTS DIVISION
BEARINGS
STRUCTURAL PARTS
STRUCTURAL PARTS
THE YALE & TOWNE


MTM RESEARCH

APPLICATION

The following analyses are presented as examples of MTM Application.

I

BURNISHING OPERATION

METHODS ANALYSIS CHART

REFERENCE No. 72933 R1

PART ASSEMBLY REAR SPRING SHACKLE DATE 12-8-54 STUDY No. 1

OPERATION No. 20 BURNISH BUSHING ANALYST R. KEENAN SHEET No. 1 OF ___ SHEETS

DESCRIPTION — LEFT HAND	No.	L H	TMU	R H	No.	DESCRIPTION — RIGHT HAND
EL No. 1 DEPRESS FOOT		BUTTON	TO	DOWN		RAM 1-1
			8.5	FM		DEPRESS FOOT BUTTON
			8.5			
EL No. 2 MACHINE TIME		RAM	DOWN	1-1		
			.050	MACHINE MINUTES		RAM DOWN
EL No. 3 INTERNAL WORK WHILE RAM IS GOING DOWN: TOSS ASIDE FIN. PART THAT FELL ON TABLE: REACH TO NEXT PART ON TABLE & REACH TO BURNISH TOOL 1-1						
PART (FIN) ON TABLE		R12B	12.9			
FIN. PART ON TABLE		G1A	1.7			
TOSS FIN PART TO FIN TUB		M18B	17.0			
FIN PART TO FIN TUB		R1I	1.7			
NEXT PART ON TABLE		R18C	18.9			
NEXT PART ON TABLE		G4A	7.3			
PART TO EDGE OF FIXTURE		M12B	13.9	(R12A)		TO BURNISH TOOL UNDER FIX
			72.4			
EL No. 4 RELEASE FOOT BUTTON TO RETRACT RAM 1-1						
			8.5	FM		RELEASE FOOT BUTTON
			8.5			
EL No. 5 MACHINE TIME		RAM	UP	1-1		
			.030	MACHINE MINUTES		RAM UP

No.	ELEMENT DESCRIPTION	ELEMENT TIME TMU	CONVERSION FACTOR .0006 LEVELED TIME	15 % ALLOWANCE	ELEMENT TIME ALLOWED	OCCURRENCES PER PIECE OR CYCLE	TOTAL TIME ALLOWED
1	DEPRESS FOOT BUTTON TO DOWN RAM	8.5	.0051	.0008	.0059	1	.0059
2	MACHINE TIME RAM DOWN		.0500	.0075	.0575	1	.0575
3	INT. WORK WHILE RAM IS GOING DOWN	72.9	(.0934)	PERFORMED DUR. EL No. 2			—
						TOTAL	

DWG. No. 72933 R1

PART DESCRIPTION	MATERIAL
ASSEM. REAR	MALL IRON PER I.H.
SPRING SHACKLE	MATLE-T GRADE 32510
	WEIGHT 1 3/4 #

OPERATION BURNISH BUSHING

OPER. NO. 20

LOCATION SPRINGFIELD DEPT 13

OPERATOR

MAN ~~WOMAN~~	NAME	NO.
	Wm. WHITE	13-2197

EQUIPMENT FOX PRESS S.N. 2163

1 BURNISHING BAR Nº 37261

SPECIAL TOOLS

CONDITIONS GOOD

QUALITY REQUIREMENTS CHECK (1) PART AT

NOON & NOON W/ DEPT INSPECTOR

STUDIED BY T. R. Keenan

APPROVED BY

SKETCHES (EQUIPMENT, TOOLS, PARTS, WORK PLACE LAYOUT, ETC.)

METHODS ANALYSIS CHART

REFERENCE No. 72933 R1

PART _____ DATE _____ STUDY No. 1

OPERATION _____ ANALYST _____ SHEET No. 1 OF ___ SHEETS

DESCRIPTION — LEFT HAND	No.	L H	TMU	R H	No.	DESCRIPTION — RIGHT HAND
EL Nº 6 INTERNAL WORK WHILE RAM IS GOING UP: REACH TO NEXT						
PART ON TABLE - PLACE BURNISHING TOOL IN BUSHING &						
PLACE UNDER RAM						
			1.7	G1A		BURNISHING TOOL
PART TO BASE OF FIX AGAINST HOLE		(M6A)	15.2	M12C		BURN. TOOL TO BUSHING IN CASTIN
			16.2	P2SE		BURN TOOL IN BUSHING
			6.9	M4B		TOP OF BURN TOOL UNDER RAM
PART		R L1	1.7	R L1		BURN TOOL
			91.7			

No.	ELEMENT DESCRIPTION	ELEMENT TIME TMU	CONVERSION FACTOR .0006 LEVELED TIME	15 % ALLOWANCE	ELEMENT TIME ALLOWED	OCCURRENCES PER PIECE OR CYCLE	TOTAL TIME ALLOWED
4	RELEASE FOOT BUTTON TO RETRACT RAM	8.5	.0051	.0008	.0059	1	.0059
5	MACHINE TIME RAM UP		.0300	.0045	.0345	1	.0345
6	INTERNAL WORK WHILE RAM IS GOING UP	91.7	(.0250)	PERFORMED DURING EL 5			—
						TOTAL	.1038

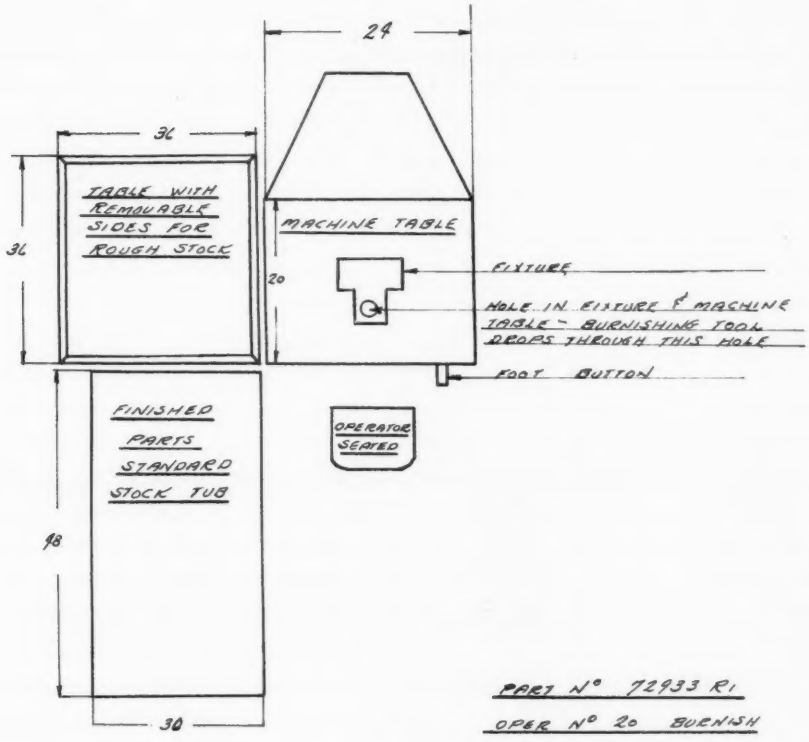
METHODS ENGINEERING COUNCIL
FORM NO. 195

PART Nº 72933 R1

OPER Nº 20 BURNISH

SKETCH OF WORK PLACE LAYOUT NOT SCALE

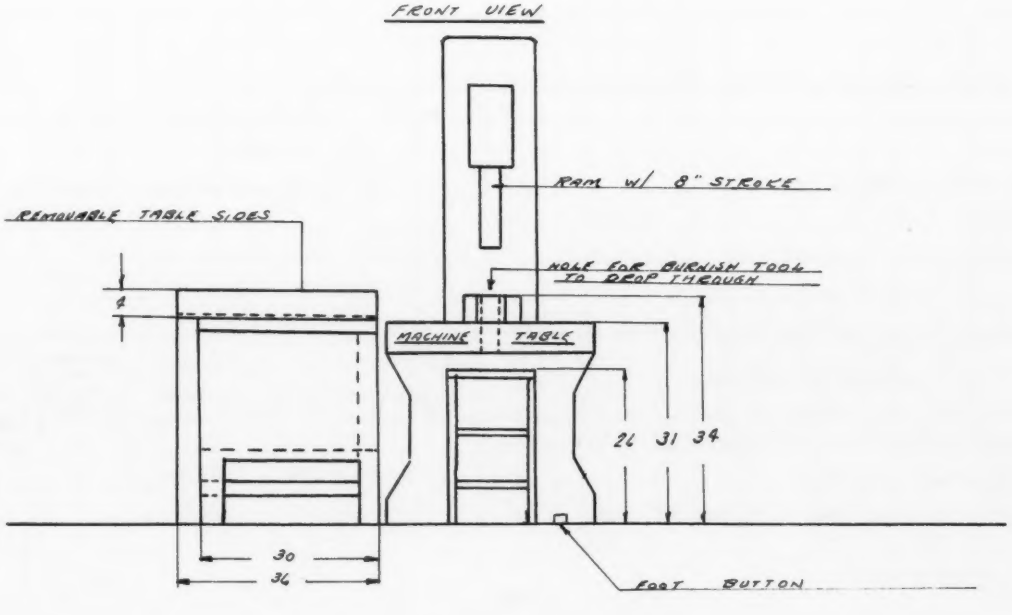
TOP VIEW



PART Nº 72933 R1

OPER Nº 20 BURNISH

FRONT VIEW



APPLICATION
II

FORMING OPERATION

METHODS ANALYSIS CHART

REFERENCE No. 76799 R1

PART BRACE LOCK PILLAR TO FLOOR DATE 12-7-54 STUDY No. 1

OPERATION Nº 20 FIRST FORM ANALYST R.KEENAN SHEET No. 1 OF 1 SHEETS

DESCRIPTION — LEFT HAND	No.	LH	TMU	RH	No.	DESCRIPTION — RIGHT HAND
EL Nº 1 WORK INTERNAL TO MACHINE TIME - GET NEXT PART IN TONGS 1-1						
RAISE FOOT FROM PEDAL		(FM)	1.7	M1C		TONGS FORWARD TO PART
			9.1	P1SSE		TONGS ON PART.
			1.7	M1A		CLOSE TONGS ON PART
PART			1.7			
			14.2			
EL Nº 2 MACHINE TIME						
			.020	MACHINE MINUTES		MACHINE STROKE
EL Nº 3 WORK EXTERNAL TO MACHINE TIME - REMOVE & POSITION PART IN DIE 1-1						
TO NEXT PART		(R2B)	8.1	M6A		MOVE PART IN DIE OUT OF DIE BY PUSHING IT W/ PART IN TONG
NEXT PART		(G3)	9.2	M2B		MOVE PART BACK W/TONGS
SLIDE PART OUT		(M2B)	9.2	M2C		MOVE PART DOWN INTO DIE
NEXT PART		(G1A)	21.0	P2NSE		POSITION PART IN DIE
			1.7	M1A		OPEN TONGS
RAISE PART UP FOR TONGS		(M2B)	8.9	M6B		TONGS TO NEXT PART
			9.5	FM		ACTUATE PRESS
			56.6			
EL Nº 4 ASIDE STACK OF FINISHED PCS 1-20						
			5.7	M3B		MOVE TONGS TO MACH. BED
			1.7	RL1		TONGS
TO STACKED PARTS (BACK OF DIE)		R16B	15.8	(R14B)		TO AREA OF STACKED PARTS
STACKED PARTS		G1A	1.7			
STACKED PARTS OUT		M3B	5.7	(R3A)		STACKED PARTS
			1.7	G1A		STACKED PARTS
			17.6	TB1		TO SKID

No.	ELEMENT DESCRIPTION	ELEMENT TIME TMU	CONVERSION FACTOR / LEVELED TIME	% ALLOWANCE	ELEMENT TIME ALLOWED	OCCURRENCES PER PIECE OR CYCLE	TOTAL TIME ALLOWED
1	WORK INTERNAL TO MACHINE TIME	14.2	—	—	—	—	PERFORMED IN EL #2
2	MACHINE TIME		.0200	.0030	.0230	1	.0230
3	WORK EXTERNAL TO MACHINE TIME	56.6	.0390	.0051	.0391	1	.0391
						TOTAL	

METHODS ENGINEERING COUNCIL FORM NO. 198

DWG. No. 16744 R1

PART DESCRIPTION	MATERIAL
BRACE LOCK	HRPO .0598
PILLAR TO FLOOR	16 GA.
	REQ. WEIGHT • 48#

OPERATION FIRST FORM

OPER. NO. 20

LOCATION SPRINGFIELD DEPT 11

OPERATOR

MAN ~~WOMAN~~	NAME	NO.
	GEORGE CROWL	11-085

EQUIPMENT PRESS S.N. 128 P&G 4
PRESS 51 STROKES PER MINUTE
FORM DIE S.D.N. 123721 W/NEST
TONGS
STD STOCK TUB

SPECIAL TOOLS

CONDITIONS GOOD

QUALITY REQUIREMENTS NO STRICT REQUIREMENTS · ACCURACY ACCOMPLISHED ON SUCCEEDING OPERATIONS

STUDIED BY T McKeenan

APPROVED BY

SKETCHES (EQUIPMENT, TOOLS, PARTS, WORK PLACE LAYOUT, ETC.)

METHODS ANALYSIS CHART

REFERENCE No. 76799 R1

PART _____ DATE _____ STUDY No. 1

OPERATION _____ ANALYST _____ SHEET No. 2 OF ___ SHEETS

DESCRIPTION — LEFT HAND	No.	L H	TMU	R H	No.	DESCRIPTION — RIGHT HAND
EL Nº 4 CONTINUED						
			29.0	B		IN SKID
			—	WIP		LAGGING LEG BROUGHT UP
STACK IN PILES		M3C	5.7	M3C		STACK IN PILES
STACK		RL1	1.7	RL1		STACK
			87.3			
EL Nº 5 OPER. MOVES FROM FIN TO RGH TUB						TO STOCK UP PARTS ON 1-20 MACH.
			31.9	AB		FROM FIN TUB
			—	TB+		TURN FROM FIN. TUB
			18.6	TB1		TO ROUGH STOCK TUB
			29.0	B		TO ROUGH STOCK IN TUB
			—	WIP		LAGGING LEG BROUGHT UP
TO ROUGH STOCK		R3B	5.9	R3B		TO ROUGH STOCK
ROUGH STOCK		G1A	1.7	G1A		ROUGH STOCK
PILE WANTED FROM OTHER PILE		M1B	1.7	M1B		PILE WANTED FROM OTHER PILE
STACK OF ROUGH STOCK		G2	5.6	G2		STACK ROUGH STOCK
LIFT UP STACK OF STOCK		M2B	9.2	M2B		LIFT UP STACK OF STOCK
STACK OF STOCK		G2	5.6	G2		STACK OF STOCK
			31.9	AB		WITH STOCK
			37.2	TB2		TO MACHINE TABLE
STACK OF STOCK TO TABLE		M3B	5.7	M3B		STACK OF STOCK TO TABLE
STACK ON TABLE		RL1	1.7	RL1		STACK ON TABLE
			5.9	R3B		TO TONGS
			1.7	G1A		TONGS
			188.3			

No.	ELEMENT DESCRIPTION	ELEMENT TIME TMU	CONVERSION FACTOR .0006 LEVELED TIME	15 % ALLOWANCE	ELEMENT TIME ALLOWED	OCCURRENCES PER PIECE OR CYCLE	TOTAL TIME ALLOWED
4	ASIDE STACK OF FINISHED PARTS	87.3	.0529	.0079	.0603	1-20	.0030
5	OPER. MOVES FROM FIN TO ROUGH TUB TO STOCK UP PARTS ON M. TABLE	188.3	.1130	.0170	.1300	1-20	.0065

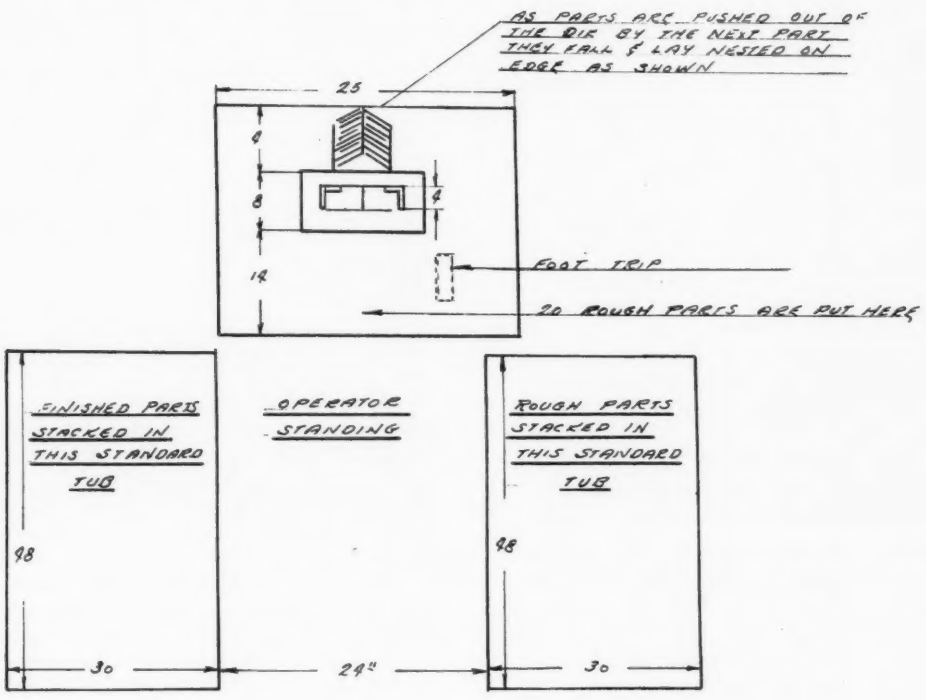
METHODS ENGINEERING COUNCIL FORM NO. 198

TOTAL .0716

PART Nº 76744 R1
OPER Nº 20 FIRST FORM

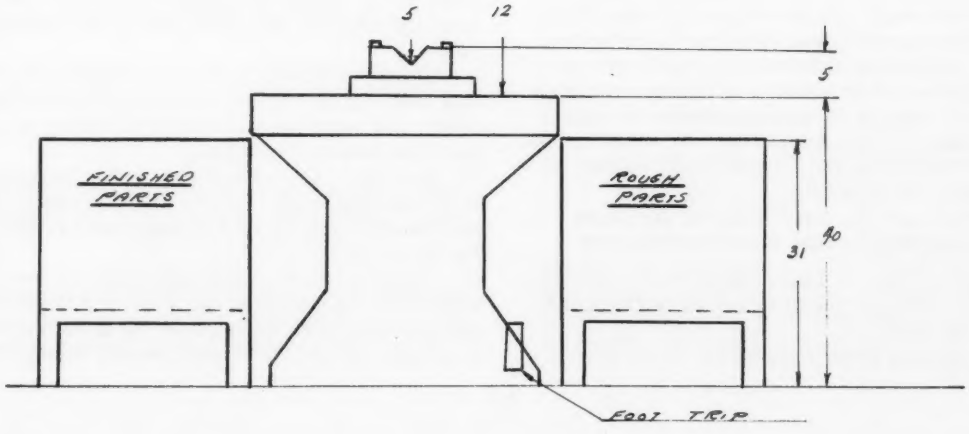
SKETCH OF WORK PLACE LAYOUT NOT SCALE

TOP VIEW



FRONT VIEW

PART Nº 76744 R1
OPER Nº 20 FIRST FORM



MTM NEWS

NEW OFFICERS — MTM ASSOCIATION OF SOUTHERN CALIFORNIA

President:	Donald L. Wheeler Grayson Controls Division Robertshaw-Fulton Controls Co. Long Beach 5, California
Vice President:	V. A. Metzger Associate Professor of Commerce Long Beach State College Long Beach, California
Secretary:	Robert R. Murray Preco, Inc. Los Angeles 22, California
Treasurer:	Lee Freeman W. J. Voit Rubber Corp. Los Angeles, California

NEW OFFICERS — CENTRAL IOWA MTM ASSOCIATION

President:	Clarence Howe Meredith Publishing Company Des Moines, Iowa
Vice President:	George M. Ruby Meredith Publishing Company Des Moines, Iowa
Secretary	Dwight Priaulx The Maytag Company Des Moines, Iowa
Treasurer:	Dan Griffin Armstrong Rubber Mfg. Co. Des Moines, Iowa

MR. JAMES ARMSTRONG, CHIEF INDUSTRIAL ENGINEER, SOLAR AIRCRAFT COMPANY WAS THE SPEAKER AT THE OCTOBER 11, 1955 MEETING OF THE CENTRAL IOWA MTM ASSOCIATION

Mr. Armstrong's talk on "Reducing Costs Thru Industrial Engineering" was based on the program which he is instituting at Solar Aircraft Company.

The definition of an Industrial Engineer, as given by Mr. Armstrong, is "A man who engineers anything in Industry." Mr. Armstrong also feels that an Industrial Engineering Department tends to hold all other departments together.

The following items were listed as the major points in establishing a cost reduction program:

1. Establishment of Labor Standards. (Solar has established 8,000 estimated standards in a 60 day period.)
2. Use of daily labor report as a check on efficiency of standards and each department's performance.
3. Inform workers as to what management is going to do. This must be done to obtain acceptance to the program.
4. Select a well established department to begin installation of standards. (Original department at Solar showed an improvement in efficiency, during the first 30 day period, from 45 per cent to 75 per cent. The overall plant efficiency during the first year has risen 30 per cent.)
5. Installation of Work Simplification Program.

Mr. Armstrong feels that MTM will be a valuable aid to his program, and plans to start MTM training at his plant in the very near future.

KELLY AFB COMPLETES WORK MEASURE IMPLEMENTATION

Kelly chalked up another enviable record when it became the first AMA to complete implementation of the Work Measurement System throughout Maintenance shops, it was revealed by Col. Fred Bell, today.

He said the splendid cooperation and support of all concerned helped Maintenance finish this tremendous task well ahead of the AMC target date.

Major Leo Matkins, Industrial Engineering division chief, pointed out that Work Measurement, in addition to being the key to good management, is also a way to give shop supervision and production workers a voice in determining what represents a fair measure of production by a group or by an individual. He said:

. ."To get the program going, it took a great deal of orientation. Altogether, approximately 178 orientation meetings were held with about 2915 key shop personnel attending. They responded enthusiastically, which of course made our job a lot easier."

The story of Work Measurement, in so far as Kelly's Maintenance program is concerned, started April 22, 1954, when the Methods and Standards Engineering branch was established. Six sections were set up within the branch and staffed with 75 shop journeymen, who were selected from 400 applicants.

Under the direction of C. H. Brauer, branch chief, this select group of people were trained in the principals and techniques of Work Measurement before being permanently assigned.

By June 1, 1954, the program was initiated within all shop branches. Major Matkins was named branch chief July 1, 1954 and assumed responsibility for the program.

As the program gained momentum a reorganization occurred November 16, 1954, and the branch became the Industrial Engineering division, headed by Major Matkins, chief and Brauer, deputy chief.

CERTIFICATES OF COMPLETION of the first 105-hour course in Methods Time Measurement taught by C. H. Brauer at Kelly were presented by Maj. Gen. Thetus C. Odom, SAAMA commander, to (left to right, front row) T. P. Byrom, L. E. Ciothier, H. T. Horton, W. E. Tennant, and CWO W. E. Tucker. In the back row are W. T. Haskell, W. C. Robinson, H. R. Schwencke and D. E. Smith. The recipients all work in Maintenance.

Key personnel included W. T. Haskell, H. R. Schwenke, Don Smith, W. E. Tennant, J. Nesloney, CWO Tucker, W. C. Robinson and R. M. Pall.

As the project progressed, top management surveyed the results with interest.

According to Brauer, Industrial Engineering specialists will continue to carefully scrutinize the program and lend their support to shop elements as needed. He said:

"This is just the beginning in so far as we are concerned and our people as well as all other Maintenance activities deserve much credit for the successful implementation which we have just completed."

Thus Kelly again has led the way and through team work has put dollars back into the taxpayers' "till."

REPORT ON MTM CONFERENCE HELD IN STOCKHOLM, SWEDEN ON APRIL 26-27 AND JUNE 7-8, 1955

Through the initiative taken by the sub-committee for Industrial Engineering of the Swedish Royal Academy of Stockholm, an MTM conference was arranged this Spring. A written invitation was sent out to a selected cross-section group of Swedish industries. The response to this invitation, scheduled for April, was so great that the committee decided to have a second conference which was held in June, 1955. The first conference was attended by 199 participants from 109 companies. The second conference was attended by 208 participants from 127 companies.

Prior to the conference, the Industrial Engineering committee had sent out a questionnaire to a group of industries in order to obtain an idea of the use of MTM in Sweden. Of the 100 companies who received a questionnaire, 57 answered. Of these 50% had less than 1000 employees and 40% had between 1000 and 5000 employees. Of the 57 companies who answered:

16 mentioned that they used MTM extensively
27 used to some extent, and,
14 used very little.

It was evident from the answers that the companies that used MTM extensively had considerably more men trained than the others and furthermore the larger the work study departments were, the more MTM was being used.

As for training and knowledge in MTM the following figures were given by the 57 companies who answered:

Complete course had been taken by 546 persons
Information courses had been given to 674 persons, and,
Speeches had been heard on MTM by an additional 1564 persons.

The use of MTM was distributed within the 16 companies as follows:

100% on methods improvement
81% on methods planning, and,
69% on training.

Improved base for incentives was presented as one of the advantages of MTM. The main problem seemed to be that management must be well informed and support MTM wholeheartedly.

On future plans for MTM the most important point seems to be a wish for an increased use of MTM for incentives particularly; furthermore, research, wider information through MTM conferences, repetition courses, follow-up application courses were also mentioned.

As a conclusion, the responses to the questionnaires showed an over-all positive attitude in favor of MTM.

The first speaker at each of the conferences was Mr. Tarras Sällfors, who can be considered as the father of industrial engineering in Sweden. He said in concentrated form as follows:

"MTM technicians can today in Sweden look forward to a better support from management as the latter has come to understand the importance and use of MTM of which the attendance of this conference also is a proof."

The rest of the two conference days were taken up by speeches and papers on the following subjects in connection with MTM:

The last development of MTM in USA.

The use of MTM in training and teaching in the ready-made clothes industry.

The use of MTM in establishing methods for the assembly of small parts.

The use of MTM for methods in assembling large parts.

The use of MTM in connection with lay-out and production of a product group.

The use of MTM in the set-up of a manufacturing process in a ready-made clothes company.

The use of MTM for methods improvement in ASEA.

The use of MTM for synthetic time standards and incentives.

The use of MTM for synthetic time standards for the production of small series.

The use of MTM for synthetic time standards in sewing work.

The use of MTM for methods standardization and synthetic time standards in the graphic industry.

MTM's place in a manufacturing enterprise.

Cooperation and experience exchanges in the MTM-field.

Here follows a few statements made during the conference which may be considered as typical from those who use MTM rather extensively:

Civilingenjör Anders Lindqvist, Försvarets Fabriksverk — The use of MTM for methods set-up for the assembly of small parts:

Workers have become more critical about incomplete methods work after the introduction of the MTM.

The possibility of establishing methods and incentive standards with MTM before the actual production has been fully confirmed.

Changes have been astonishingly few after production has started based on MTM studies.

In the plants where MTM has been used the productivity is now 25% above previous level.

Mr. Lindqvist considers that errors and changes are mostly caused by faulty studies, erroneous quality specifications and belated design changes and so on. He said also that MTM does not eliminate these things but helps to reduce them very effectively.

Civilingenjör Erik Olsson, AB Separator — The use of MTM in connection with a set-up of production for a product group:

MTM has great value in the choice of method.

The method-mindedness that has been created thanks to MTM has been of immeasurable value in the over-all planning of a new production.

MTM gives justice to simple solutions and shows clearly that so-called finer and more elegant solutions might not at all be the right answer to the problem.

Civilingenjör Paul Gustafsson, Junex Konfektions AB — The use of MTM in the set-up of a manufacturing process in a ready-made clothes company:

Mr. Gustafsson praised MTM particularly for establishing methods before production. He has also used MTM for training, which has given very good results.

Mr. Gustafsson stressed during the speech the importance of standard data and formulas as the only means by which standards can be set economically and practically in the sewing industry. He concluded by saying that without a thorough knowledge of MTM an accurate and truly effective standard data system will fail.

Överingenjör Knut Jonsson, ASEA — The use of MTM in methods improvements within ASEA:

Mr. Jonsson mentioned the importance of tool engineers being more and better MTM educated.

He found MTM particularly valuable in measuring the difference between several methods. This he said, can never be done so easily with conventional procedures nor will they give the same incentive for methods improvement.

Mr. Jonsson concluded by saying that the use of MTM is fully justified on the single point of bringing method-mindedness into the plant and connected departments.

The consensus of opinion of the speakers, which appeared to be shared by the audience, was besides increased productivity through MTM, that plants using MTM extensively all generally show improved planning, better lay-outs, greater neatness and discipline, better machines, better work-place set-ups, and similar advantages.

"MTM IN THE FOUNDRY" SUBJECT OF OCTOBER 24 MEETING OF THE MTM ASSOCIATION OF OHIO, INC.

Mr. Hubert Frank of the OPW Corporation addressed the group on the application of MTM by a company which has been using Methods Time Measurement in its foundry for over two years. A film was shown on foundry methods and cost estimating of core manufacturing. Sawing and grinding operations were discussed and illustrated.

Mr. Frank also reviewed the highlights of the Fourth International MTM Conference which was held in Chicago the first week of October.

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1955 MTM Conference *PROCEEDINGS* will be available December 15, 1955 at Executive Office.

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R.R. 101 Disengage

This report contains a preliminary study of the element disengage. While it is still classified as tentative, the report contains some extremely interesting conclusions on the nature and theory of this element.

R.R. 102 Reading Operations

The first step in the use of MTM for establishing reading time standards is contained in this report. In addition, the report contains a synopsis of the work done in this field by 11 leading authorities.

R.R. 104 MTM Analysis of Performance Rating Systems

A talk presented at the SAM-ASME Time and Motion Study Conference, April 1952. It contains an analysis of performance rating systems and various performance Rating Films from an MTM standpoint.

R.R. 105 Simultaneous Motions

This report represents almost two man-years' work on a study of Simultaneous Motions. It is a final report of the Simultaneous Motions project undertaken by the MTM Association. While it does not purport to provide complete and exhaustive answers to all problems in the field of Simultaneous Motions, it presents a great deal of new and valuable information which should be of interest to every MTM practitioner.

R.R. 106 Short Reaches and Moves

This report contains an analysis of the characteristics of Reaches and Moves at very short distances. It develops important conclusions concerning the application of MTM to operations involving these short distance elements.

R.R. 107 A Research Methods Manual

The research activity of the Association has developed an effective and comprehensive set of methods for carrying on research in human motions. This report details the major techniques used. Adequate sources of motion data, film analysis, data recording, and statistical methods of analysis are among the topics discussed.

R.R. 108 A Study of Arm Movements Involving Weight

In this report, the results of a large investigation into the effect of weight on the performance times of arm movements are presented. While more effective means of determining correct time allowances for moving weights are given, the comprehensive discussion of the whole area of weight phenomena is probably of more fundamental importance. The effect of such conditions of performance as the use of one or two hands, sliding vs. spatial movements, and male and female performance are among the topics presented.